PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	COVID-19 outbreak rates and infection attack rates associated with the workplace: a descriptive epidemiological study
AUTHORS	Chen, Yiqun; Aldridge, Timothy; Ferraro, Claire; Khaw, Fu-Meng

VERSION 1 – REVIEW

REVIEWER	Yaglom, Hayley Translational Genomics Research Institute
REVIEW RETURNED	28-Sep-2021

GENERAL COMMENTS	This is an exceptionally written article on a topic that has not been significantly highlighted during the pandemic. I appreciate the authors mention of different workplace settings. The description of the different datasets used for this analysis is well-done. I do not feel there is anything majorly excessive or lacking in this paper and it was a pleasure to review. My one suggestion is to perhaps add some language on how this type of analysis in Europe can be extrapolated to other countries such as the United States. Workplace culture may be different, but outbreaks of COVID-19 have still occurred in these settings. It would be nice to see similar analyses presented.

REVIEWER	Hawkins, Devan MCPHS
REVIEW RETURNED	21-Nov-2021

GENERAL COMMENTS	This paper examines outbreak and attack rates across industries in England. It fills in an important gap in the literature. Below, I describe some recommendations to improve the manuscript. Abstract: • Consider revising this sentence. “but assessment of the rate of outbreak occurrence in different types of workplace settings has not previously been assessed. • Consider beginning results sections with this sentence: “The highest attack rate was for outbreaks in close contact services (median 16.5%), followed by outbreaks in restaurants and catering (median 10.2%), and in manufacturers and packers of nonfood products (median 6.7%).” Results • I recommend presenting table 4 with the industry sectors as rows and the region as columns (you can have sub-columns under

	regions for each of the measures). This make comparison of industries across regions easier. • In table 5, why is the median attack rate shown rather than the cumulative attack rate? • It is worth considering adding confidence intervals for the rates, especially for the attack rates where small numbers are sometimes being used to calculate the rates. I don't think this is 100% required, but it is worth considering. Discussion • I would like to see more details about the public health implications of these findings. What could these industries do more to protect their workers? Are these findings consistent with studies that have examined death rates by industry and occupation?

VERSION 1 – AUTHOR RESPONSE

Thank you for the comments. They are very helpful and encouraging. We have provided point-by-point response to the issues raised.

1. 'Strengths and limitations' section
We have revised this section accordingly. The five bullet points are now related specifically to the methods.

2. Applying this type of analysis to other countries
We have added the information in the Discussion section, in page 11, that 'Although this study was only able to analyze the workplace outbreak data in England, the same approach can be applied to the calculation of outbreak rates and attack rates in other countries in the UK, Europe, and United States where the relevant available data sources can be explored'.

3. Revising a sentence – 'but assessment of the rate of outbreak occurrence in different types of workplace settings have not previously been assessed' in the Abstract.
We have revised the sentence in the Abstract in page 1, which now states that 'but the rate of outbreak occurrence in the workplace has not previously been assessed'.

4. The order of presenting the results in the Abstract
We have moved the sentence from the end of the Result section in the Abstract to the beginning of the section.

5. Presenting table 4 differently
We have revised the presentation of table 4 accordingly but included it as a supplemental table (Table S1) because the revised table is too large to fit well in the main text. The supplemental Table S1 has been cited within the main text of the manuscript.

6. Reasons for using the median attack rate rather than the cumulative attack rate in table 5
We calculated the attack rates for individual outbreaks by sector and investigated the patterns of their distributions. The existing supplemental diagram (Figure S2) has demonstrated a right skewed distribution of the attack rate. Therefore, the median and the range of attack rate can present more appropriately the distribution than the cumulative attack rate.

7. Consideration of adding confidence intervals for the rates
We have considered this. We thought confidence intervals would only represent statistical uncertainty

of the rates but would not account for other sources of uncertainties or biases in how the outbreak data were gathered. We therefore added a footnote in Table 2 (page 6), where rates are first presented, to clarify this. The footnote states that 'Due to the uncertainties in the data gathered for this analysis, confidence intervals are not presented since this would only represent statistical uncertainty'.

8. More details about public health implications of the findings and whether the findings consistent with those from occupational mortality studies
We have described at the end of the Discussion section that further studies are underway, as part of the PROTECT COVID19 National Core Study on Transmission and Environment (https://sites.manchester.ac.uk/covid19-national-project/). The studies include on-the-ground investigations of outbreaks in the industries with high outbreak rates as well as bring multiple data sources together to investigate the association between individual workers' risk of COVID-19 infection and the risk of outbreak at their workplace settings. We will address the questions raised by the reviewer in our future publications.